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Diet selection in a molluscivore shorebird across Western Europe

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Table S1. Estimates of handling time *h* (s) and how they relate to shell length (*L* in mm; shell height in case of *Hydrobia*). Bivalve estimates are taken from Piersma *et al.* (1995), estimates for *Hydrobia* stem from Van Gils *et al*. (2005). As assumed by Zwarts and Blomert (1992) and Van Gils *et al*. (2005), handling burrowed bivalves lasts at least 2 seconds because of the time required to take them out of the mud.

Prey species	Size class	Handling time *h* (s)
Macoma & *Scrobicularia*	≤ 9 mm	2
	10-18 mm	$0.0233*L^2$
Cerastoderma	≤ 7 mm	2
	8-16 mm	$0.0344*L^2$
Hydrobia	0-8 mm	0.33

Table S2. Estimates of searching efficiency a ($m^2 s^{-1}$), taken from Piersma *et al*. (1995) in case of *Macoma* and *Cerastoderma*. Searching efficiencies for *Srobicularia* and *Hydrobia* were assumed to be similar to those for *Macoma*.

Prey type	Searching efficiency a ($m^2 s^{-1}$)
Macoma & Scrobicularia	0.00052
Cerastoderma	0.00064
Hydrobia	0.00052

Table S3. Densities D (m^{-2}) and shell lengths (mm; or heights in case of *Hydrobia*) of available prey within 500 m of dropping samples, averaged (± SD) per species per site across the means per dropping sample.

Area	Sites	N dropping samples	Prey species	Length class (mm) Mean ± SD	Density D (m^{-2}) Mean ± SD
Dutch Wadden Sea					
	Engelsmanplaat	20			
			Macoma	10.3 ± 1.6	379 ± 204
			Cerastoderma	13.4 ± 0.8	298 ± 561
			Hydrobia	2.3 ± 0.9	6,101 ± 4,377
	Griend	21			
			Macoma	6.0 ± 1.6	300 ± 253
			Cerastoderma	12.7 ± 0.7	564 ± 459
			Hydrobia	3.5 ± 0.9	6,060 ± 5,086
The Wash					
	Stubborn Sand	27			
			Macoma	6.0 ± 0.0	8 ± 21
			Cerastoderma	10.2 ± 0.9	613 ± 215
			Hydrobia	3.0 ± 0.0	38 ± 101
	Breast Sand	72			
			Macoma	8.6 ± 1.5	881 ± 368
			Cerastoderma	10.0 ± 1.4	599 ± 388
			Hydrobia	2.7 ± 1.2	5,422 ± 881
Mont Saint-Michel Bay					
	Cherrueix	27			
			Macoma	9.1 ± 1.6	176 ± 124
			Cerastoderma	11.5 ± 0.9	486 ± 486
			Hydrobia	3.0 ± 0.0	29 ± 89
Pertuis Charentais					
	Aiguillon Bay	21			
			Macoma	6.9 ± 2.4	273 ± 151
			Cerastoderma	10.7 ± 2.7	215 ± 196
			Hydrobia	3.5 ± 1.1	5,515 ± 1,017
	Moëze	12			

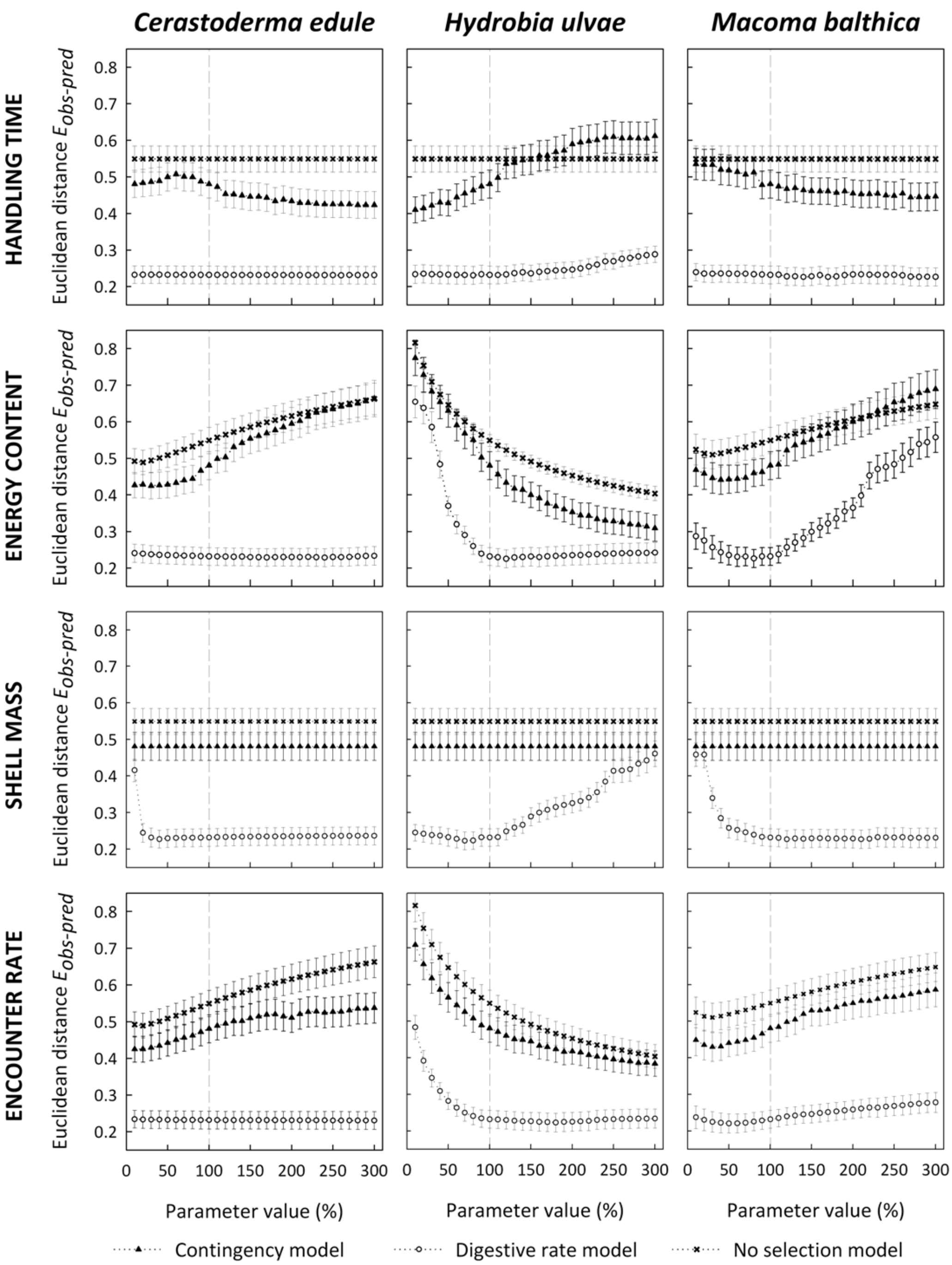
		Macoma	12.4 ± 1.9	96 ± 66
		Cerastoderma	-	-
		Hydrobia	3.1 ± 1.6	5,515 ± 1,017
Oléron	9			
		Scrobicularia	6.3 ± 2.3	498 ± 363
		Cerastoderma	10.7 ± 2.0	90 ± 51
		Hydrobia	3.8 ± 0.9	15,888 ± 6,151

Table S4. Observed $\log_{10}$-$\log_{10}$ relationships for flesh mass *e* (mg ash-free dry mass) and ballast mass *k* (mg dry mass of shell) as a function of shell length (mm; or shell height in case of *Hydrobia*). N gives the number of individual mollusks measured (which represents all individuals within a single site; we had to pool all benthos samples within single sites to get a large enough dataset to be able to perform these allometric regressions).

Area	Sites	Prey species	Parameter	Constant	Slope	N	R^2
Dutch Wadden Sea							
	Griend						
		Macoma	*e*	-2.301	3.212	124	0.939
		Macoma	*k*	-2.310	4.076	157	0.814
		Cerastoderma	*e*	-2.640	3.523	229	0.934
		Cerastoderma	*k*	-1.309	3.473	244	0.884
		Hydrobia	*e*	-0.949	1.823	192	0.672
		Hydrobia	*k*	-0.460	2.015	192	0.793
	Engelsmanplaat						
		Macoma	*e*	-2.339	3.227	70	0.925
		Macoma	*k*	-2.382	4.097	67	0.958
		Cerastoderma	*e*	-2.326	3.347	45	0.984
		Cerastoderma	*k*	-0.932	3.142	45	0.960
		Hydrobia	*e*	-0.940	1.763	86	0.641
		Hydrobia	*k*	-0.406	1.664	86	0.792
The Wash							
	Stubborn sand						
		Macoma	*e*	-2.067	2.819	86	0.725
		Macoma	*k*	-2.424	4.133	84	0.768
		Cerastoderma	*e*	-2.043	2.787	141	0.907
		Cerastoderma	*k*	-1.307	3.466	139	0.859
		Hydrobia	*e*	-0.736	1.096	67	0.363
		Hydrobia	*k*	-0.394	1.213	65	0.611
	Breast Sand						
		Macoma	*e*	-2.231	2.875	802	0.803
		Macoma	*k*	-1.307	3.467	534	0.859
		Cerastoderma	*e*	-2.810	3.395	408	0.908

	Cerastoderma	*k*	-0.927	3.133	397	0.966
	Hydrobia	*e*	-0.960	1.206	242	0.397
	Hydrobia	*k*	-0.269	1.428	239	0.695
Mont Saint-Michel Bay						
	Macoma	*e*	-1.708	2.605	291	0.910
	Macoma	*k*	-1.860	3.577	286	0.955
	Cerastoderma	*e*	-2.867	3.419	667	0.767
	Cerastoderma	*k*	-1.143	3.207	673	0.891
Pertuis Charentais						
Aiguillon Bay						
	Macoma	*e*	-2.256	2.860	183	0.825
	Macoma	*k*	-1.892	3.628	163	0.960
	Cerastoderma	*e*	-2.172	2.691	66	0.362
	Cerastoderma	*k*	-1.136	3.220	61	0.806
	Hydrobia	*e*	-0.855	1.515	848	0.502
	Hydrobia	*k*	-0.430	2.019	853	0.647
Moëze						
	Macoma	*e*	-1.428	2.173	91	0.771
	Macoma	*k*	-2.128	3.839	82	0.946
	Cerastoderma	*e*	-2.372	2.803	44	0.780
	Cerastoderma	*k*	-1.897	3.819	42	0.924
	Hydrobia	*e*	-0.798	1.491	531	0.523
	Hydrobia	*k*	-0.417	1.897	536	0.717
Oléron						
	Scrobicularia	*e*	-2.488	2.942	93	0.890
	Scrobicularia	*k*	-1.479	3.048	32	0.963
	Cerastoderma	*e*	-1.382	2.130	22	0.769
	Cerastoderma	*k*	-0.991	3.135	19	0.982
	Hydrobia	*e*	-1.035	1.708	318	0.526
	Hydrobia	*k*	-0.378	2.063	317	0.786

Fig. S1. Parameter-sensitivity of Mean Euclidean distances $E_{obs\text{-}pred}$ (± SE) between the observed diet and the predicted DRM-diet (dots), the CM-diet (triangles), and the NSM-diet (crosses) for each prey species. Prey-specific parameters are from top to bottom: handling time *h*, energy content *e* (ash-free dry mass flesh), ballast mass *k* (dry mass of shell) and encounter rate λ (being the product of searching efficiency *a* and density *D*). Vertical dashed lines denote the parameter values as used in the tested models. Note that *Scrobicularia* replaces *Macoma* at the Oléron site.



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